

# Pediatric Counseling and Subsequent Use of Smoke Detectors

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**Abstract:** Effects of a brief educational and purchase program concerning home fires and smoke detectors by two pediatricians were compared to "routine" counseling without such a program using two groups each of 120 parents of well children. Inspection performed four to six weeks after the office visits showed that of 55 experimental group parents without detectors prior to the program, 26 purchased and 19 installed them correctly. No control group parents did so. (*Am J Public Health* 1982; 72:392-393.)

In the United States each year, residential fires are responsible for more than 7,000 deaths and 300,000 hospitalizations for injuries,<sup>1-3</sup> many of which result in permanent disfigurement and secondary psychological effects.<sup>4-5</sup> Reliable, effective, and inexpensive smoke detectors are readily available, and they can reduce morbidity and mortality from home fires by alerting occupants before escape becomes impossible.<sup>6-8</sup> The purpose of this study was to assess the effectiveness of pediatricians' counseling and facilitation of purchase of smoke detectors on acquisition and installation of detectors in patients' homes.

## Materials and Methods

A control group consisting of parents of 120 children seen consecutively (April 9-23, 1979) for routine health care by two pediatricians (MB and FW), were selected from a predominantly White, middle class practice in suburban Pittsburgh. The next 120 children seen (April 24-May 8, 1979) constituted the experimental group. Both groups received identical care except that the experimental group received a waiting room pamphlet\* and a one-minute educa-

tional message\*\* by the two pediatricians concerning the hazards of home fires and the importance of smoke detectors. Experimental group parents could also buy a smoke detector at cost (\$9.50) before leaving the office or, if undecided, during the subsequent four to six weeks.

Four to six weeks after the office visit, each parent was contacted by telephone by a research assistant, who explained that their pediatricians, in cooperation with Children's Hospital, were involved in a study to ascertain information regarding home safety. Parents were asked for permission for a home safety inspection to be performed to identify potential hazards. It was emphasized that they would be provided with a complete assessment of the inspection. Within one to two days of the telephone conversation, the research assistant conducted a comprehensive home inspection that included the presence, location, installation\*\*\* and function of smoke detectors.† The time frame called for subject collection, waiting period to allow installation, and home inspection in the control group to occur earlier by approximately 1, 1½ and 4 weeks respectively.

## Results

A home inspection was completed for 105 of the control group and 108 of the experimental group. Seven families in each group refused to participate and eight control and five experimental group families could not be contacted.

Parental age, years of education, and home ownership status (owned or rented) were similar for both groups (Table 1). There was no relationship between parental education or age with either the presence of a detector in the two groups prior to the study, or the purchase of one in the experimental group after the counseling program. In the 105 control and 108 experimental homes inspected (Table 2), 56 control and 46 experimental group homes had properly installed detectors before the start of the study, 46 and 42 of which, respectively, were judged operational. Nineteen additional homes in the experimental group had correctly installed, operational smoke detectors which were purchased in the pediatricians' office,‡‡ while no control group families had installed smoke detector subsequent to their office visit.

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\*Pamphlet: "Home fires cause many deaths and injuries; smoke detectors allow early escape; installation must be according to manufacturers' instructions. Smoke detectors can be purchased at cost (\$9.50) from this office."

\*\*The message was standardized.

\*\*\*Proper installation was defined using National Fire Protection Association's standards.

†Smoke detector function was tested by pressing a button on units so equipped, or by lighting a match under the detector.

‡‡Seven families had not installed detectors purchased in the office.

**TABLE 1—Demographic and Residence Characteristics of Families Having a Home Inspection**

Family Characteristics	Control Group	Experimental Group
	N = 105	N = 108
Age (years)		
Mean Maternal Age	29	30
Mean Paternal Age	30	31
Education (years)		
Mean Maternal Education	14	14
Mean Paternal Education	14	15
Residence		
Rented home/apartment	12	16
Owned home/apartment	93	92

The difference in both control and experimental groups in the percentage of properly installed and operational detectors in relation to home ownership status was 55 per cent in owned and 18 per cent in rented units.

## Discussion

The results indicate that brief counseling by two pediatricians, augmented by a written pamphlet and by improved access to purchase of smoke detectors, resulted in 26 of 55 parents without smoke detectors purchasing detectors and installing them correctly in most cases. This response would seem to justify the minor investment of pediatricians' time. However, such a judgment must be qualified by the recommendation of the National Fire Protection Association that detectors should be present at every level of the house; in this study, one correctly installed and operational device was sufficient to qualify a home as satisfactory.

The finding that detectors installed before the study in the experimental group homes were more often operational than were detectors in the control group may reflect the response of experimental group parents to counseling by placing fresh batteries in detectors already owned.

**TABLE 2—Smoke Detector Status Assessed by Home Inspection**

Status	Status Prior to Study		After Counseling* Experimental
	Control	Experimental	
Correctly Installed**	56	46	65
Operational***	46	42	61
Non-operational	7	2	2
Incorrectly Installed	8	7	7
Purchased, Not Installed	—	—	7
No Smoke Detector	41	55	29

\*No control group homes installed a smoke detector after the pediatric visit.

\*\*Operation was not checked in three control and two experimental group homes that had detectors prior to the study and in two experimental group homes who purchased detectors after counseling.

\*\*\*When more than one smoke detector was present in a home, the home was considered to have a correctly installed and operable detector if one of them was correctly installed and operable.

The disparity in percentage of detectors in owned vs rented dwellings suggests reluctance of renters to pay for improvements to homes they do not own. This problem has been addressed through legislation in a few cities in the United States requiring owners of such units to provide for adequate smoke detection devices.<sup>10</sup>

Most efforts by physicians to alter patient behavior in the area of health maintenance have shown minimal positive results.<sup>11</sup> Additional variables that may have been responsible for the positive outcome of the study were:

- Families' personal physicians were involved;
- The message was short;
- The cost of the smoke detector was small;
- A minimal amount of non-repetitive action was required.<sup>12-15</sup>

With the study design, it is not possible to determine the most important input variable (pamphlet, message, easy access to purchase). In addition, the middle-class study sample cautions against extrapolation of findings to other socioeconomic groups.

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